

SPANNING



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BETWEEN STRUCTURE AND NATURE

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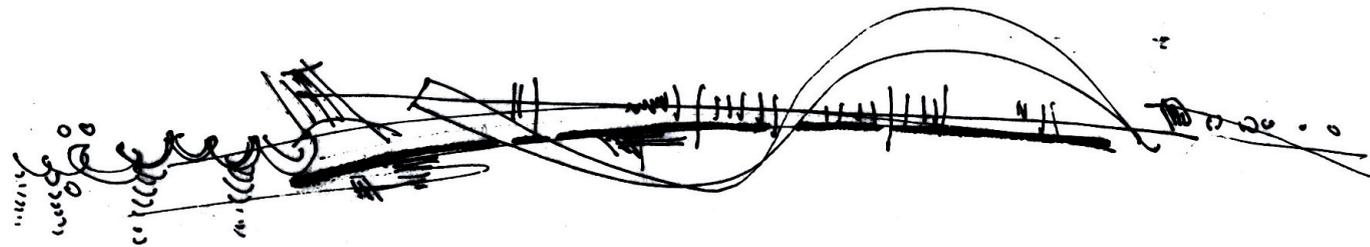
Thesis submitted to the faculty of the
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A B S T R A C T

The design project, a new student union building for the Virginia Tech campus is a 420-foot-long structure spanning from earth to water. Along a steel-glass bridge, three simple volumes play together to achieve the functions of the student union.

There is an order among Nature, Architecture, and People in this project. Simple geometric forms and the elegant structure interact with nature to achieve the order. People animate the serenity and become the core of the poetic environment.

The building is also a spanning between the past and the future. Imagining that many years later, when graduates of Virginia Tech sit on the balcony of the bridge with their family, recalling memorable events that happened near the duck pond, the building presents not only a spanning between structure and nature, but also an expression of human place, which I believe architecture should be.

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I N T R O D U C T I O N

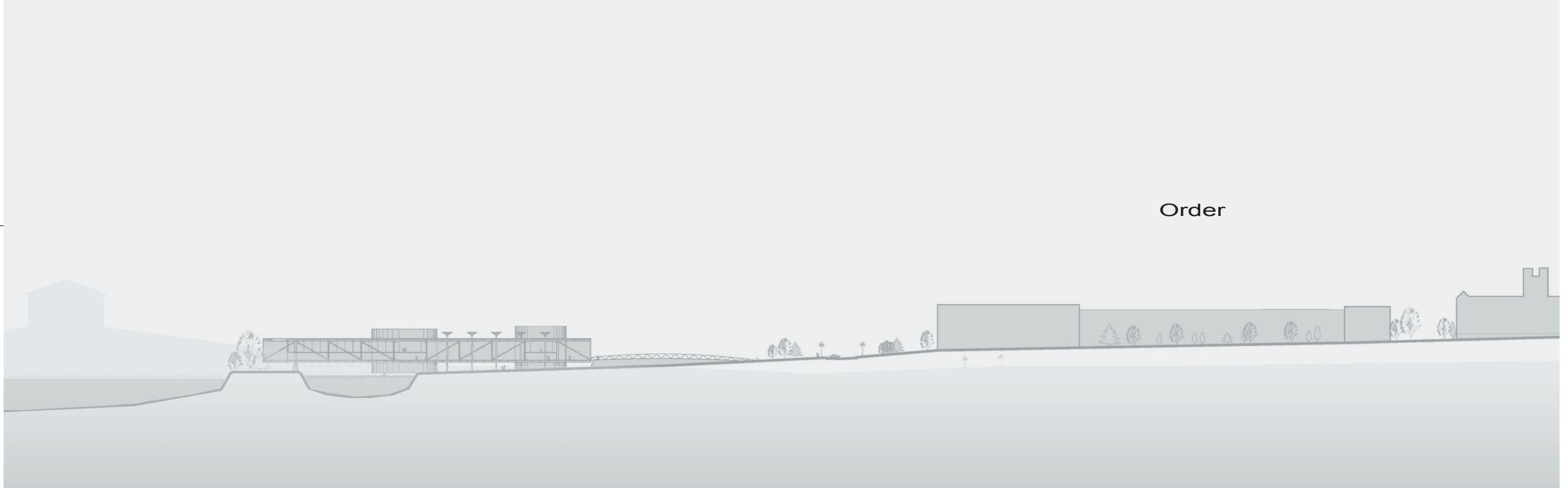
Every architect will confront the same design question: what is the relation between architecture and nature? When we take a glance at the history of architecture, we find a wide range of replies to this question. Le Corbusier, a believer in man-made objects, thought a building must be a clear, sophisticated statement. It should stand in contrast to nature, rather than appear as an outgrowth of some natural formation. Nature and architecture could enhance one another in this manner and create a sort of harmony through contrast.

Eastern architects express the understanding of the relation in another way. Tadao Ando said "The moment that nature enters into a relationship with architecture, it becomes no longer whole. It changes its appearance and is reduced to elements like light, water or sky. Nature, which up to that point had remained definite, becomes, through its resonance with the geometry embodied in the architecture, an abstraction..."¹. Church on The Water is a complete example of his idea. In this project, nature enters the building and the building creates a power with nature.

The essential goal of Chinese traditional garden architecture is to integrate architecture and nature. This concept is from Chinese philosophy – Heaven and People merge into one. To create a view harmonious with nature and culture is a common goal in Chinese traditional architecture.

In this thesis, by designing the student union building located in Virginia Tech's campus park, I have attempted to demonstrate that architecture enriches nature and nature makes architecture more powerful.

1. Richard C. Levene, El Croquis 44 Tadao Ando, 1972, p.32



Order

I began this project with the idea of bringing the student union to water. The spanning structure integrates sky, water, and landscape. Seeking an order between architecture and nature was the first approach of this project.

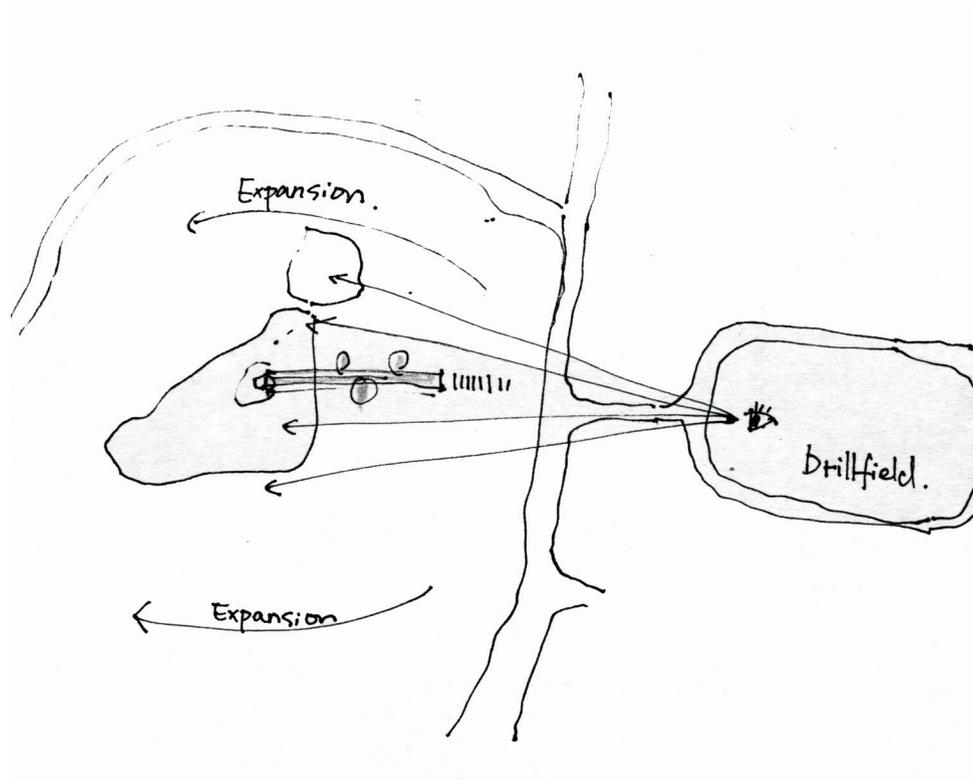


CONDITIONS

The proposed site is located over the duck pond of Virginia Tech's campus. The duck pond, a part of the beautiful campus park, is the end of the campus core.

Here, there is a potential for architecture and nature to enhance each other.

Virginia Tech Campus Plan



Site Analysis

According to Virginia Tech's long-term strategy, the campus core will expand toward the west, which makes the proposed building an end of the past as well as a beginning of the future. To the extent, the building is a spanning across generations.

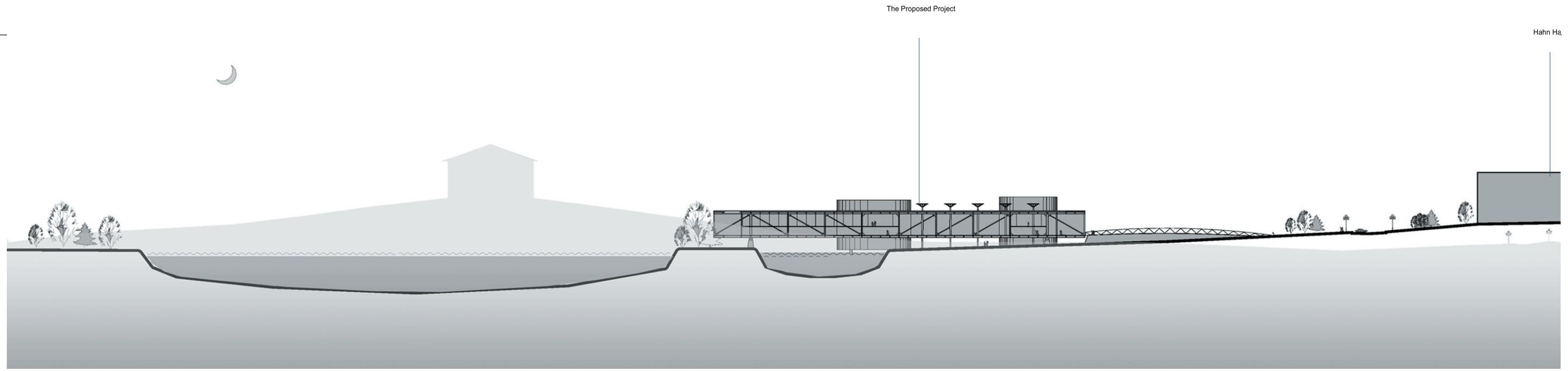
The slender shape of the building allows the views toward the west from the campus to the duck pond to remain unobstructed.

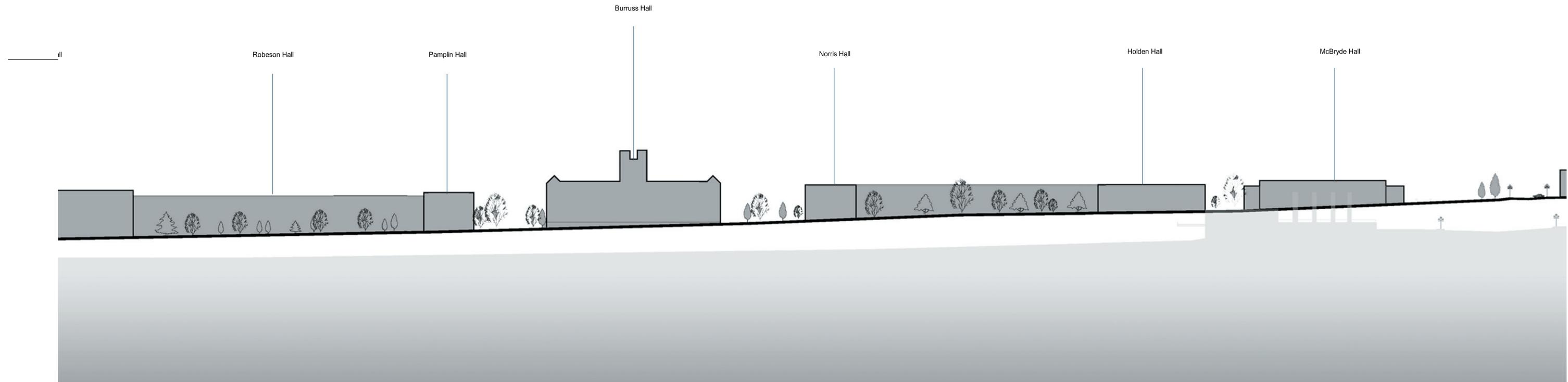


Diagram of Campus Axes

ORDER OF THE CAMPUS

There are two long axes in the Virginia Tech campus, which organize the campus plan. One is the view axis from the chapel to the president's house, and the other is the axis of the buildings surrounding the Drillfield.







Major Willams Hall

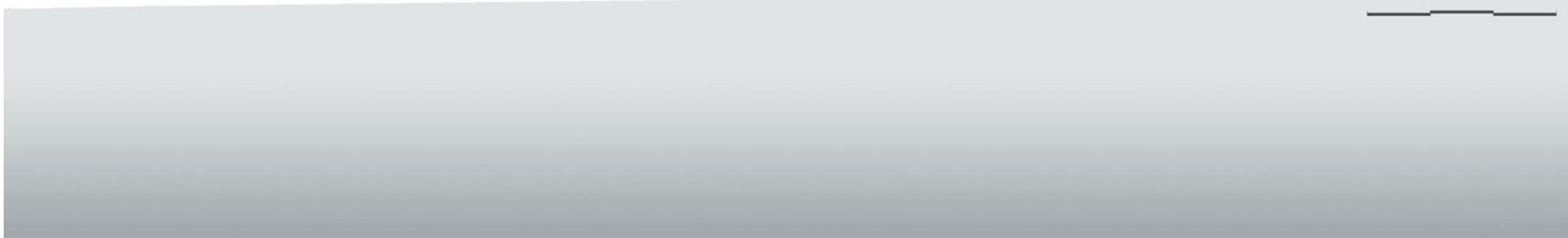
Shanks Hall

Monteith Hall

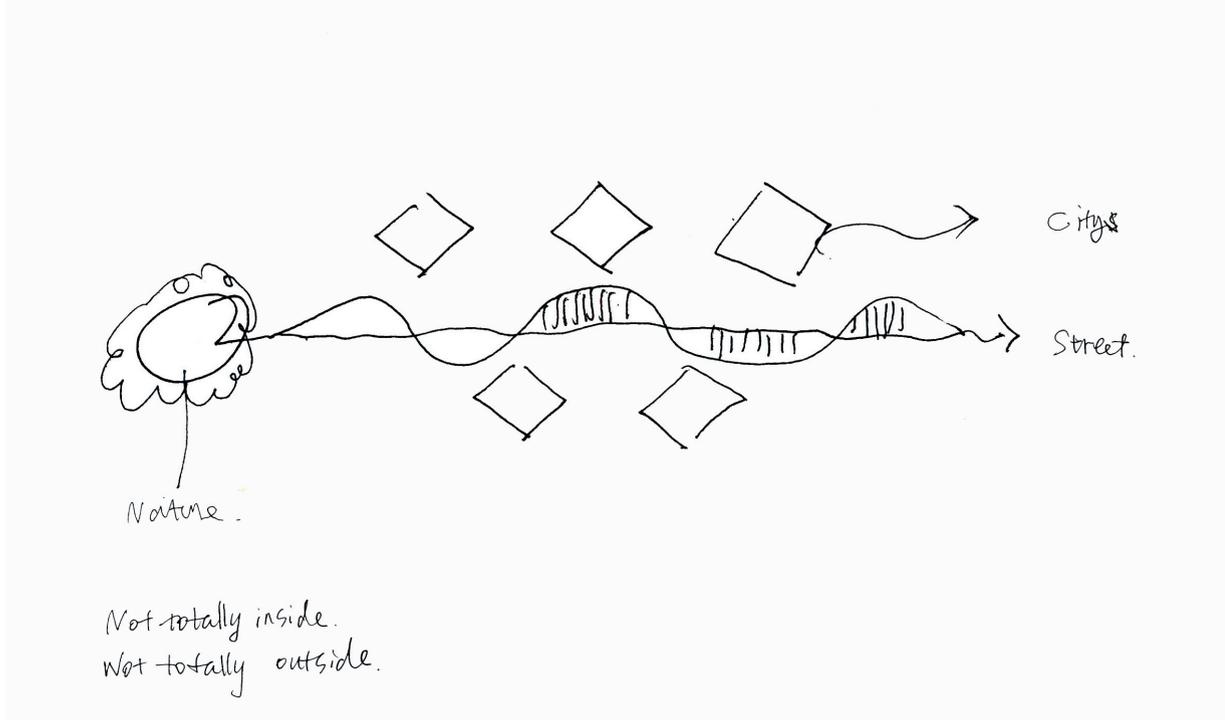
Shultz Hall



Section A-A



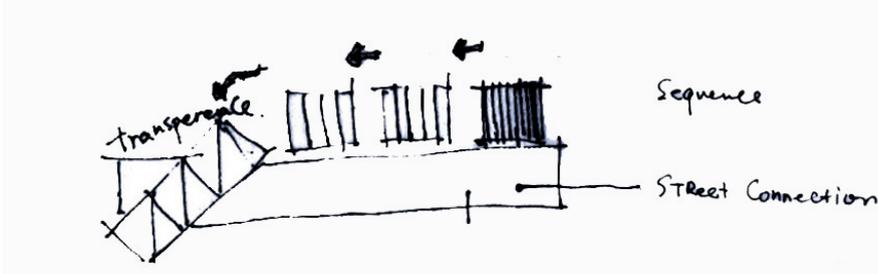
Section B-B



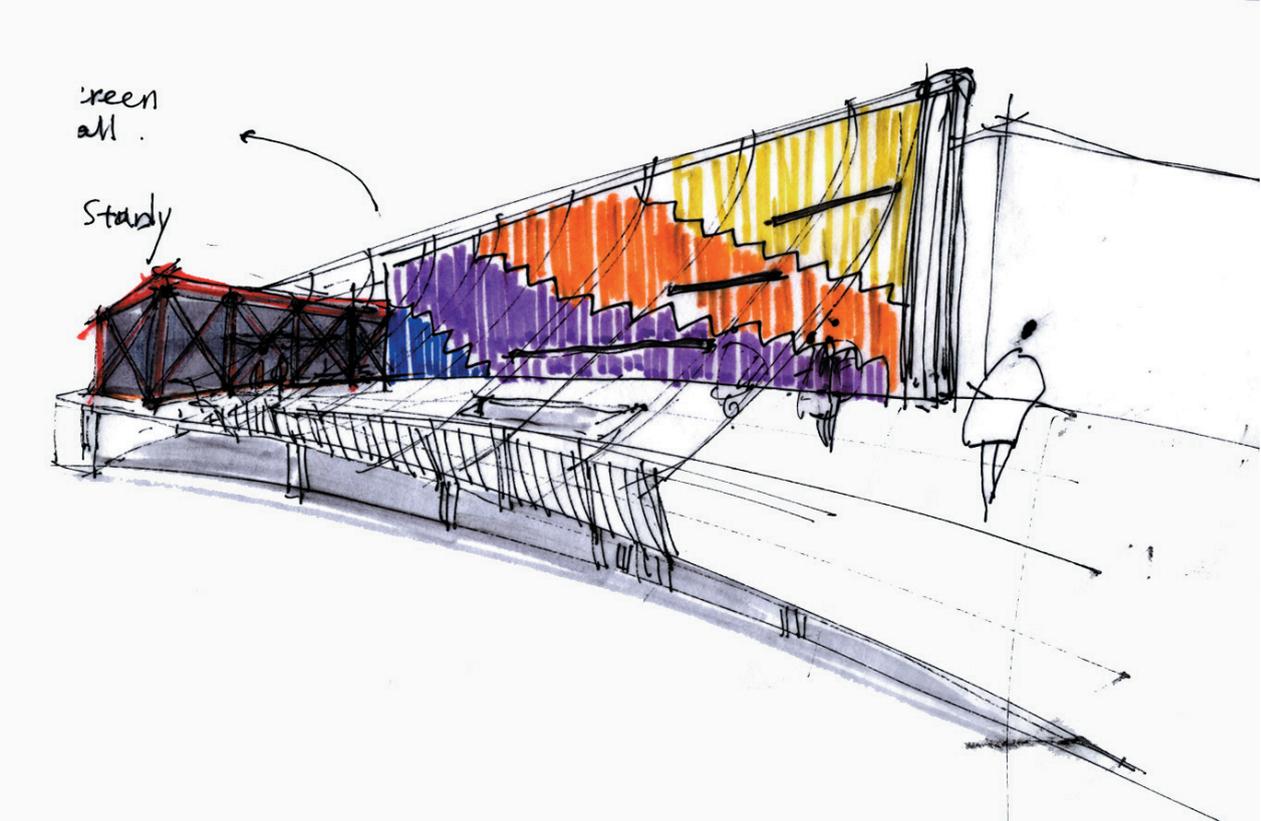
ORDER OF BUILDING

The program for the student union combines four functions, including student office space, a theater, entertainment space and a dining area. Three schemes were developed to study the relationship between architecture and nature according to the order of the site.

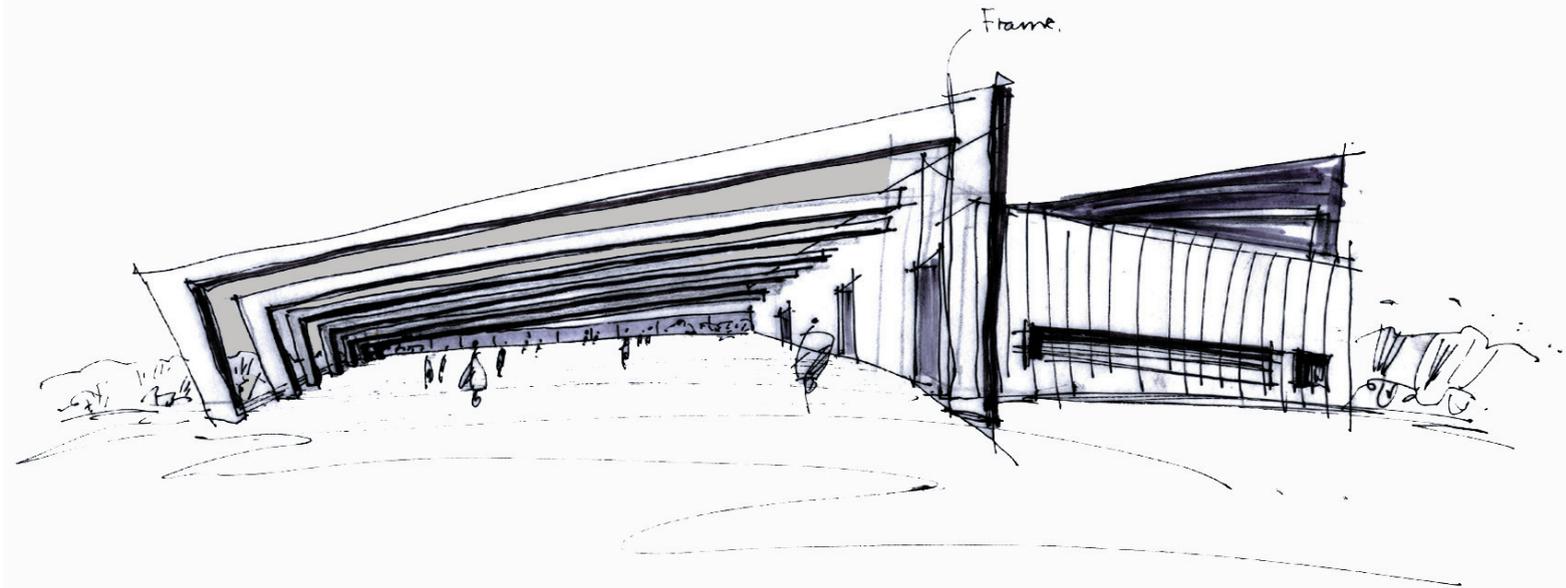
Scheme A - 'Street' Idea



First, I attempted to design a long 'street' to bring the student union to water. The street would be a large open meeting space for people, organizing the buildings containing the secondary functions.

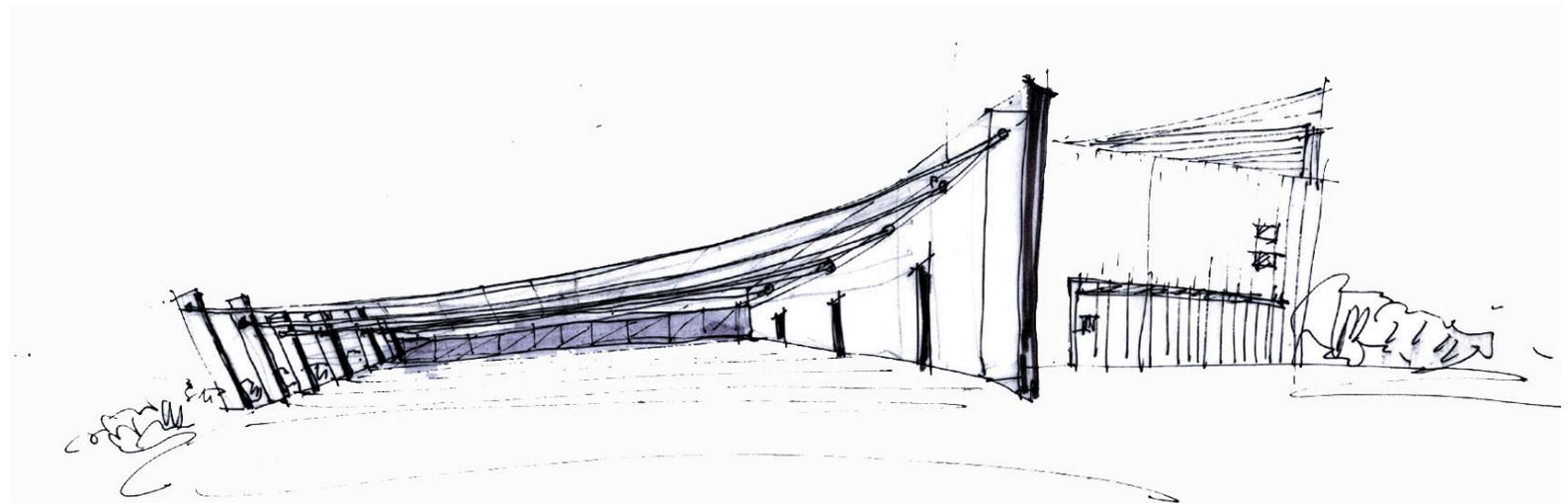


Analysis of The Relation Between 'Street' and Buildings



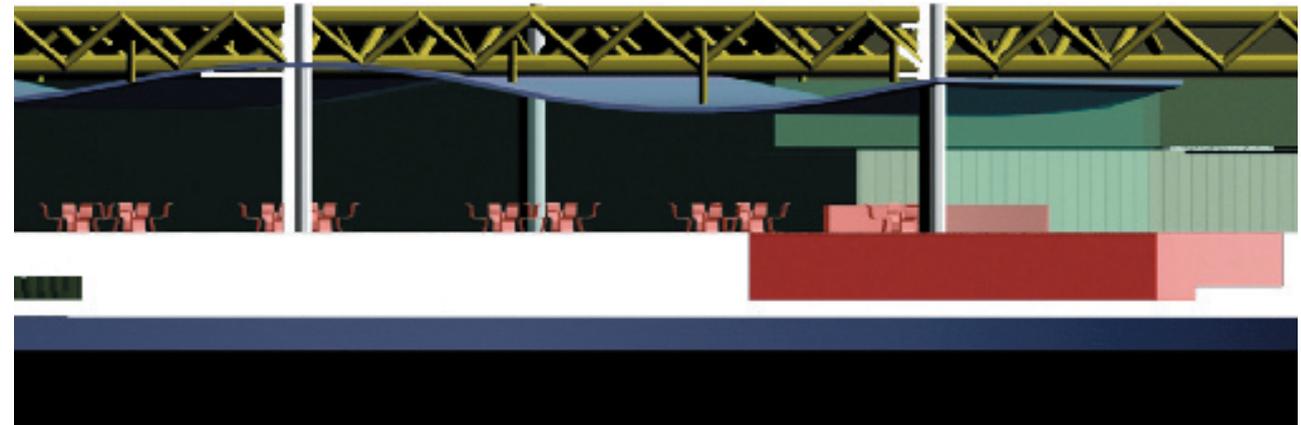
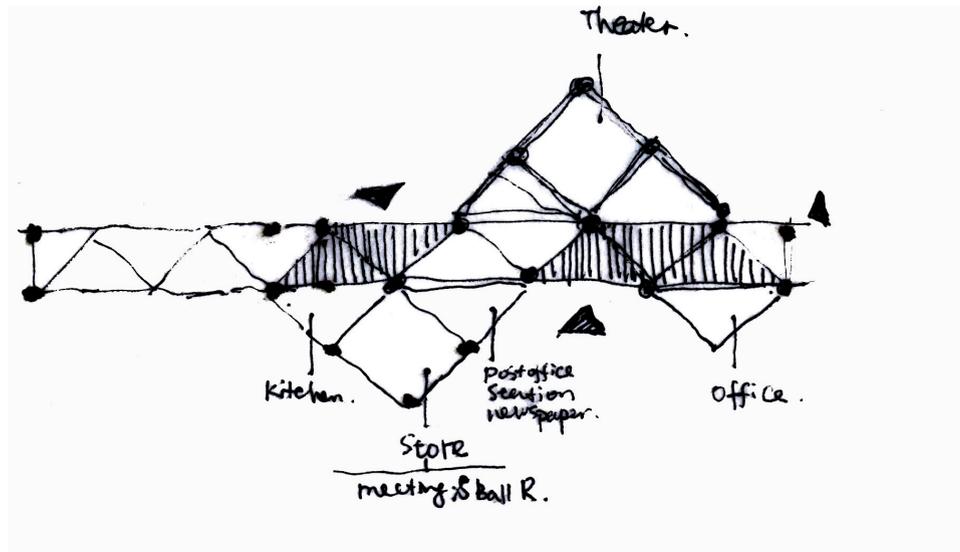
Street Idea I

I studied and compared the scale, materials and the structure of the street in order to define the relationship between the street and the proposed buildings.



Street Idea II

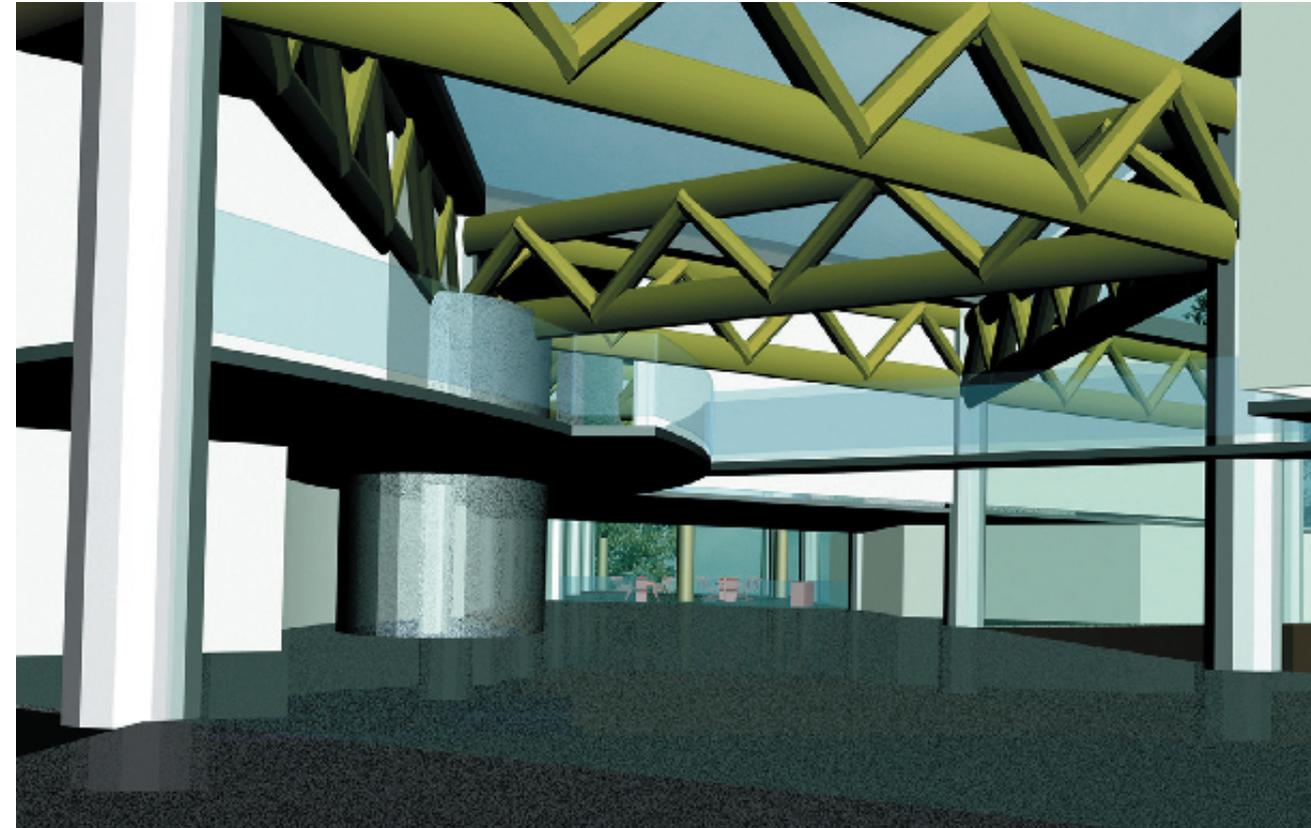
Scheme B - Modular Space

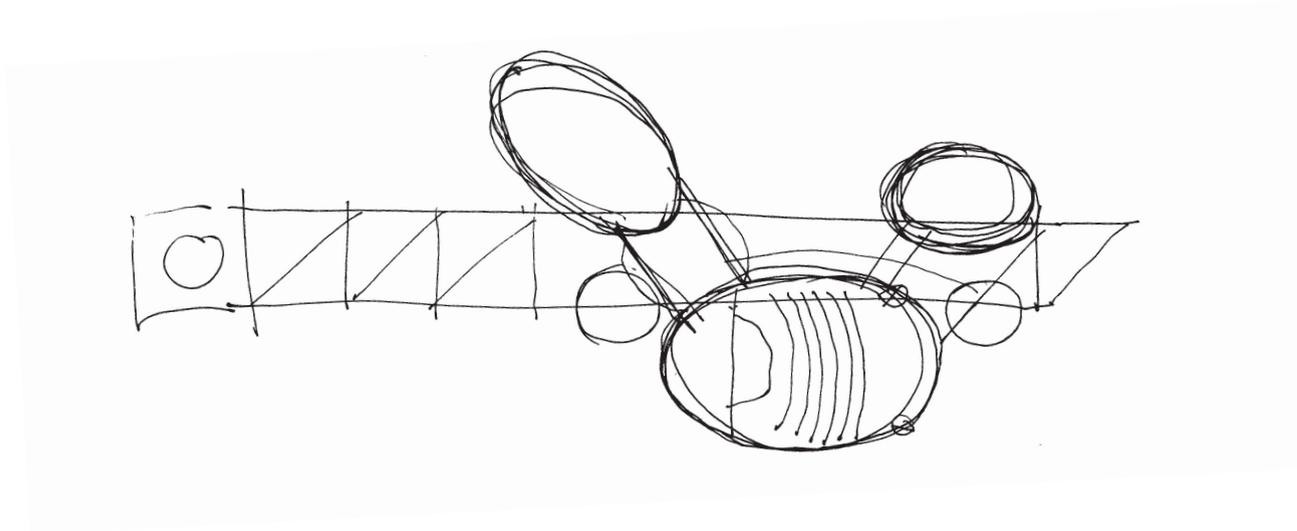


I kept the idea of designing a 'street' as a big public open space. However, the public space and other functional spaces should interact together instead of remaining separate. As a result, I designed the second scheme - Two spaces cooperate by using the modular triangular structure. With glass wall and glass roof, the transparent public space contrasts with the other functional spaces.

With the development of the design, I found out that the modular structure works well to organize the spaces, but there is no hierarchy in this design. It is far away from my original goal, which is to seek a simple but strong expression in order to achieve the dialogue with nature.

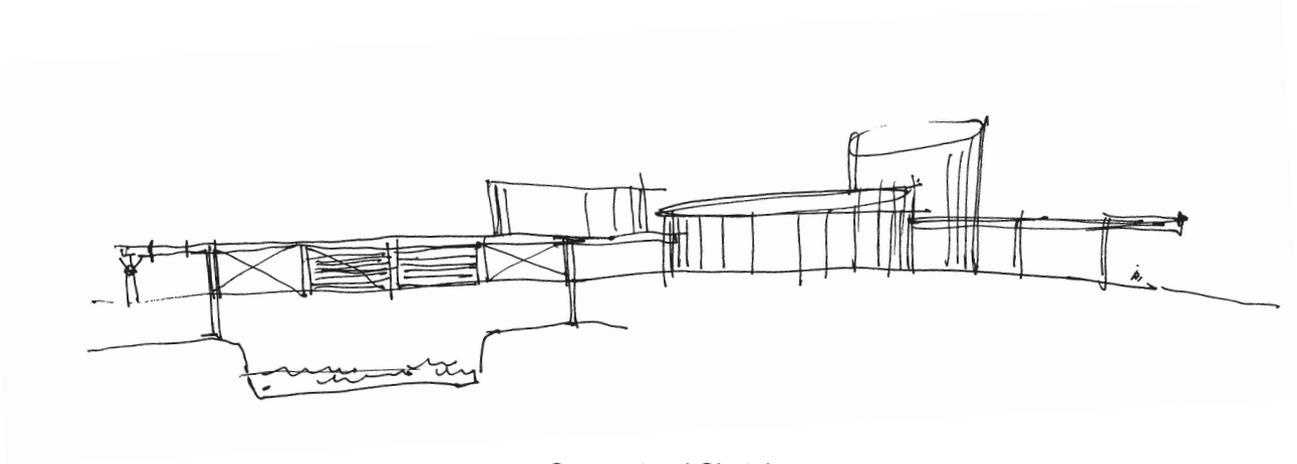
The digital study model on the right shows the triangular modular public space.





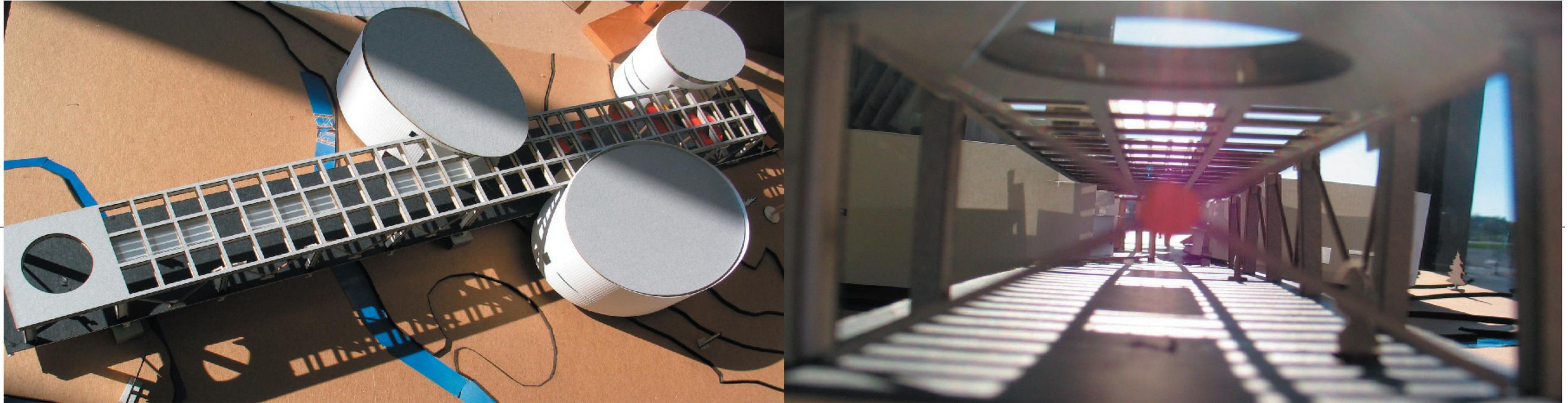
Scheme C - "Family" Union

The final scheme intensely expressed my thesis. A slender bridge and three various volumes play together, achieving a dialogue with the duck pond.

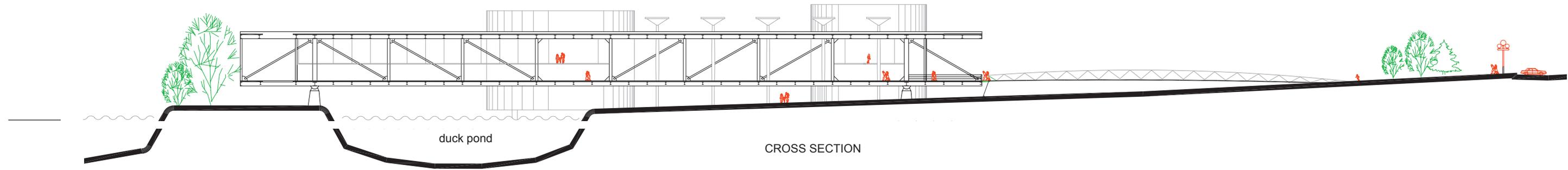


Conceptual Sketches

The building's texture, color and the inverted reflection in water will be mainly studied in this project to pursue the idea -- architecture enriches the landscape, and the landscape makes the building more powerful.



The working model helped me to understand the relation between the building and site, to understand the beauty of structure, and to ask some architectural questions. What is the structural expression in this project? What is the connection between the two structural systems?



The long section expresses the relationship between the building and the site. There are two reasons for the elevation of the bridge above the ground and water. First, the elevated bridge has the same level with the road, enabling people to walk into the steel-glass bridge by a curved ramp without going up and down. The second reason is to pursue a degree of airiness and the sense of sitting in a room above the ground and water, a quality which an earth-bound building would not have.